GEVONDYAN, Tigran Arutyunovich; DOBROGURSKIY, S.O., doktor tekhnicheskikh
nauk, professor, retsenzent; KOKHTEV, A.A., redaktor; BILITSKAYA,
A.M., izdatel'skiy redaktor; GLADKIKH, N.N., tekhnicheskiy redaktor

[Spring mechanisms; theory, design, methods of operating and
testing] Pruzhinnye dvigateli; teoriia, raschet, metody kontrolia
i ispytanii. Moskva, Gos. izd-vo obor. promyshl., 1956. 366 p.
        (Springs (Mechanism))   (MLRA 8:9)

Kokh7ev, H.A.

VEYS, D.A.; KOKHTEV, A.A.; LELYANOV, V.A.; MALYSHCH, V.I.; POVOLOTSKIY, L.I.;
RASKATOV, V.M., inzhener; TOPORNIN, G.S.[deceased]; LAPUSHKIN, A.D.,
dotsent, retsenzent; USPASSKIY, P.P., professer, retsenzent; ARKHAN-
GEL'SKIY, V.M., kandidat tekhnicheskikh nauk, retsenzent; ENGINER, %.
L., kandidat tekhnicheskikh nauk, retsenzent; SHAROV, M.Ya., kandidat
tekhnicheskikh nauk, retsenzent; YUR'IEV, M.G., inzhener, retsenzent;
LYUTIKOV, A.F., redaktor; MODEL', B.I., tekhnicheskiy redakter.

[Manual on materials for the construction of locomotives and railroad
cars] Spravochnik po materialam dlia lokomotivo- i vagonostroeniia.
Pod obshchei red. V.M. Raskatova. Moskva, Gos. nauchno-tekhn. izd-vo
machino-stroit. lit-ry, 1956. 481 p.
        (Locomotives--Construction) (Railroads--Cars--Construction)

KOKHTEV, A.A., inzhener.

Aeonomical rolled sections. Izobr. v SSSR 1 no.5:5-10 N '56.
(MIRA 10:3)

(Steel bars) (Pipe, Steel)

KOKHTEV, A.A., inzhener.

Automatization of industrial production and the tasks of inventors and efficiency promoters. Izobr. v SSSR 1 no.6:7-10 D '56.
   (Automatic control)   (Inventions)   (MLRA 10:4)

Kokhtev, A.A

AID P - 4297

Subject   : Czechoslovakia/Engineering

Card 1/1   Pub. 128 - 22/25

Author   : Kokhtev, A. A., Engineer

Title   : Achievements of Czechoslovak Machine Building

Periodical : Vest. mash., #2, p. 69-76, F 1956

Abstract : This is the second and concluding article in this
            journal reporting on the Czechoslovak Exposition
            "10-years of the People's Democratic Czechoslovakia"
            of automobile construction, transport machine con-
            struction, shipbuilding, Diesel construction, road-
            building machinery and some other sections of machine-
            building technology. Photos.

Institution : None

Submitted   : No date

KOKHTEV, A. A.

AID P - 4325

Subject   : USSR/Engineering

Card 1/1   Pub. 128 - 25/26

Authors   : Kokhtev, A. A., Engineer and Vvedenskiy, T. A.

Title   : Gedyk, P. K. Normalizatsiya na mashinostroitel'nom
                zavode (Normalization in a Machinebuilding Plant)
                Uralo-Sibirskoye otdeleniye MASHGIZA, Sverdlovsk, 1955,
                186 p., 5000 copies printed. (Book review).
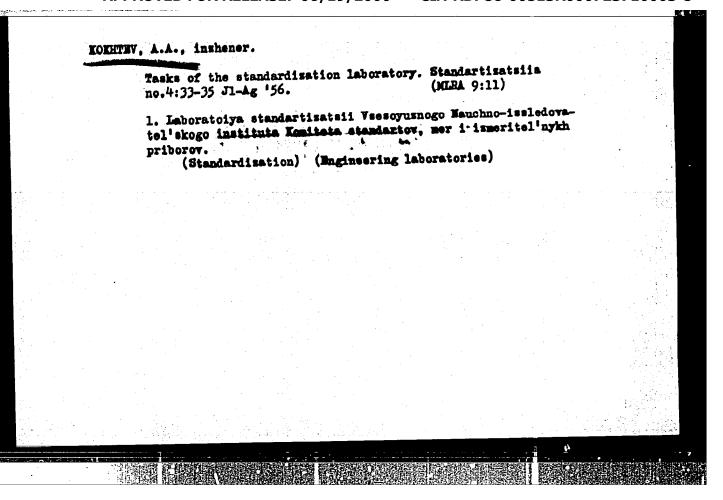
Periodical   : Vest. mash., #3, p. 85-88, Mr 1956

Abstract   : Two critical reviews by the above-mentioned authors
                of the book of P. K. Gedyk, who outlines all the
                shortcomings of the standarization of operation and
                production in the Soviet machine-building industry,
                mainly on the basis of his experiences in the Ural
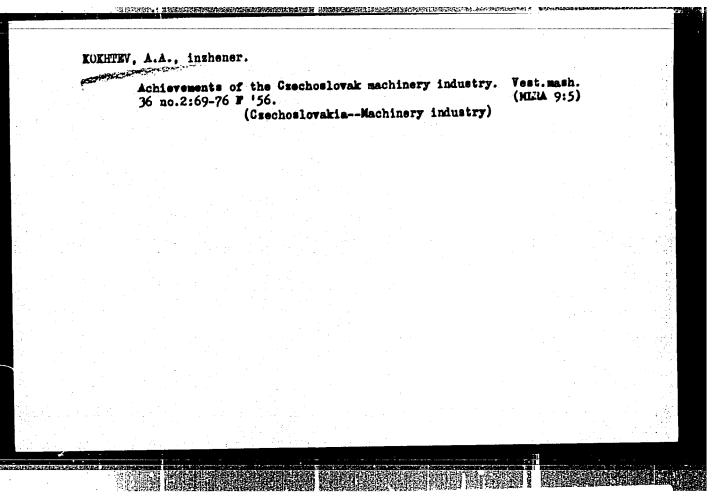   Machine-Building Plant.
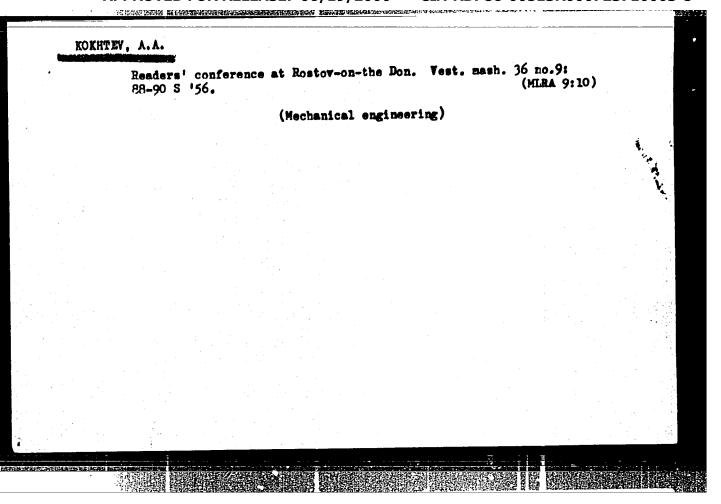
Institution : None

Submitted   : No date

KOKHTEV, A.A., inzhener.

Tasks of the standardization laboratory. Standartizatsiia
no.4:33-35 Jl-Ag '56.   (MLRA 9:11)

1. Laboratoiya standartizatsii Vsesoyuznogo Nauchno-issledova-
tel'skogo instituta Komiteta standartov, mer i izmeritel'nykh
priborov.
        (Standardization) (Engineering laboratories)

KOKHTEV, A.A., inzhener.

Achievements of the Czechoslovak machinery industry. Vest.mash.
36 no.2:69-76 F '56.   (MLRA 9:5)
                    (Czechoslovakia--Machinery industry)

KOKHTEV, A.A., inzhener; VVEDENSKIY, T.A.

"Standardization in the machinery industry". P.K.Gedyk. Reviewed by
A.A.Kokhtev, T.A. Vvedenskii. Vest.mash. 36 no.3:85-88 Mr '56.
(Machinery--Standards) (Gedyk, P.K.)   (MLRA 9:6)

KOKHTEV, A.A.

Readers' conference at Rostov-on-the Don. Vest. mash. 36 no.9:
88-90 S '56.   (MLRA 9:10)

(Mechanical engineering)

KOKHTEV, A.A., inzhener.

Means of automatization at the All-Union Industrial Exhibition.
Vest.mash.36 no.11:70-80 N'56.   (MIRA 10:1)
        (Machinery, Automatic--Exhibitions)
            (Automatic control)

KOKHTEV, A.A.

IL'IN, M.M.; SHOFMAN, L.A., kandidat tekhnicheskikh nauk, retsenzent;
KUZNETSOVA, A.G., izdatel'skiy redaktor; KOKHTEV, A.A., inzhener,
redaktor; ROZHIN, V.P., tekhnicheskiy redaktor.

[Production of one-piece steel ring blanks] Proizvodstvo stal'nykh
tsel'nokatanykh kolets-zagotovok. Moskva, Gos.izd-vo ober.promyshl.
1957. 126 p.   (MIRA 10:4)
                     (Rolling (Metalwork))

Kokhtev, A.A.

AUTHOR: Kokhtev, A.A., Engineer   28-3-3/33

TITLE: Interdependence of Parameter Series and Normalized-Design Series
               of Machines (Vzaimozavisimost' parametricheskikh i konstruktiv-
               no-normalizovannykh ryadov mashin)

PERIODICAL: Standartizatsiya, 1957, # 3, May-June, p 14-21 (USSR)

ABSTRACT: The most important task of the research and project organization
               at the present time is stated to be working out of parameter
               series for machines which satisfy technological needs and give
               a substantial economic effect. It is now necessary to find the
               formation laws of parameter series and to find out what number
               of type-dimensions is to be chosen within the limit values of
               a parameter range that would really give an increase of pro-
               duction series without an undue increase in machine weight.
               The future needs of the state must also be taken into account.
               It must be discovered how the so-called normalized-design
               machine series, so relatively widespread in USSR machinebuilding,
               come about. The factors involved in the practical choice bet-
               ween the geometric progression series (5th, 10th 20th, 40th,
               or 80th) are treated. It is stated that practice has shown
               that production of aggregate machine series meets consumer
Card 1/4   needs well and that this method - aggregatizing - is a better

28-3-3/33

Interdependence of Parameter Series and Normalized-Design Series of Machines

means for providing complete sets of special machines, instru-
ments, etc. than any other production method. As an example
of possible normalization, excavators could be taken into
the same normalized-design series with floating cranes and
railway cranes, with normalized components (as the reversable
rotating device, friction couplings, brakes etc.). According
to NIIKhIMMASh, a number of utterly different chemical ap-
paratus of various types can be composed of only 12 basic
elements (casing, bottom, cover, flanges and the like) in
different combinations (Fig. 5). As an example of foreign
practice, gas turbines of the French firm "Turbomeka" are
mentioned. These form a series (scale) of four modifications
together with two turbo-engines and one compressor, all nearly
completely composed of identical parts. They are also pro-
duced in USA, England, Japan and Spain.
    As to the method of parameter series as such, the author
considers it necessary and practical, since type ranges can
be abridged or extended as the case may require. But he does
not consider it a sufficient precondition for a right and
practical way of design development in most machinebuilding

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28-3-3/33

Interdependence of Parameter Series and Normalized-Design Series of Machines

branches, for parameter series based on progressions predeter-
mine a similarity of design and parameters of the basic compo-
nents and parts. In this way they limit their unification or
make unification difficult, particularly when the values of
the progression denominator φ are high, as for instance $\varphi = 1.6$.
There are two trends in development of parameter series:

    a. with only one φ value - when modifications of different
special-purpose machines are put together into one normalized-
design series;

    b. with various φ values - when sizes of the same type of
similar-purpose machines are forming a series.

    The first trend is not yet widely applied but is promising
and certainly will find extensive application, whereas the
second trend is already being extensively applied in state
standardization practice, as for instance for standards of types
and basic parameters for some metal-cutting machine tools,
hammers, presses and other machines. The author emphasizes
the importance of convertibility of normalized-design machines
(tractors into road-building machines, cranes into excavators).

Card 3/4   He states that a practical division between statewide stan-

28-3-3/33

Interdependence of Parameter Series and Normalized-Design Series of Machines

        dardization and all kinds of normalization on the basis of
        interrelation between the parameter series and the normalized-
        design series, is a separate problem which should be treated
        separately.
           There are 6 figures, and no references.

ASSOCIATION: VNII of the Committee of Standards, Measures and Measuring De-
        vices (VNII Komiteta standartov, mer i izmeritèl'nykh priborov)

AVAILABLE: Library of Congress

Card 4/4

KOKHTEV A.A.

AUTHOR:, Kokhtev, A.A., Engineer.   122-3-27/30

TITLE: Shipbuilding at the All-Union Industrial Exhibition
          (Sudostroyeniye na Vsesoyuznoy promyshlennoy vystavke)

PERIODICAL: Vestnik Mashinostroyeniya, 1957, No.3, pp. 74 - 81
                                                    (USSR).

ABSTRACT: Many types of ships were represented by models and des-
      criptions:
      a) An Atomic-powered ice-breaker designed for keeping open the
      Northern passage. Length 134 m, maximum width 27.6 m, displace-
      ment 16 tons, power 44 000 hp, speed 18 knots, draught 9.2 m.
      All-welded hull construction. The propulsion machinery consists
      of turbines with electrical transmission to three propeller
      shafts. The steam for the main propulsion and auxiliary pur-
      poses, including accommodation services, is produced in an
      atomic reactor. The main turbines are situated in two com-
      partments in the middle part of the ice-breaker hull and the
      propeller motors in two rear compartments.
      b) Whaling factory ship. Maximum length 217.8 m. Maximum
      width 27.8 m. Displacement 43 800 tons. Useful load 23 360 tons.
      Draught with full load 10.6 m. Speed 16 knots. Propelled by
      two 7 500 hp, 115 r.p.m. two-stroke, reversing, single-acting
Card1/8 supercharged diesel engines. 100% utilisation of the whale

Shipbuilding at the All-Union Industrial Exhibition.   122-3-27/30

carcass is ensured in the factory. The output per season is 48 000 tons of whale oil, about 5 000 tons of frozen whale meat, about 1 400 tons of frozen liver, about 11 000 tons of other raw materials, including insulin, ready for processing.
c) Whale catcher. Length 63.6 m. Width 9.5 m. Displacement 1 272 tons. Speed 16.5 knots. Power 3 100 hp. Long endurance (25 days) and improved sea-going qualities are claimed.
d) Large refrigerated diesel-propelled fishing trawler. Length 84.7 m. Width 14 m. Displacement 3 670 tons. Draught 5.55 m. Speed 12 knots. 2 000 hp main diesel engines. All-electric auxiliary machinery.
e) Medium fishing trawler. Length 39.1 m. Width 7.3 m. Speed 9.5 knots. Power 300 hp. Improved hauling gear and auxiliaries are claimed.
f) Small fishing coaster. Shallow draught of 1.4 m and 56 tons displacement.
g) Single-screw, single-deck tanker of 25 000 tons capacity with unlimited range. Length 199.5 m. Width 26.4 m. Displacement 38 000 tons. Draught 10.32 m. Speed 18 knots. Steam turbine propulsion machinery of 20 000 hp. All-welded hull construction with reinforcement for steaming in drifting
Card2/8 ice. Three electrically-driven centrifugal pumps of 750 m^3/hr

122-3-27/30

Shipbuilding at the All-Union Industrial Exhibition

capacity and three electrically-driven piston pumps of 150 m^3/hr capacity for cargo loading. Four different fire-extinguishing systems (steam, water spray, air foam and CO_2).

h) Tanker of 10 000 tons capacity. Length 45.45 m. Width 19.2 m. Displacement 16 250 tons. Draught 8.5 m. Speed 13 knots with two diesel engines of 2 000 hp each. The heating system maintains the cargo at a temperature of 35 C.

i) Low draught tanker. Length 123.5 m. Width 16 m. Draught under river conditions 2 m; under sea conditions 4 m. The respective displacements are 4 657 and 6 057 tons. The corresponding load capacities are 2 600 and 4000 tons. The speed is 10.50 knots at a draught of 3.2 m. Two main diesel engines of 800 hp at 300 r.p.m.

k) Refrigerated cargo vessel for carrying 2 700 tons of frozen fish; unlimited range. Length 129 m. Width 16.8 m. Displacement 10 250 tons, draught 7.4 m. Speed 16 knots. Four main diesel engines of 1 800 hp. The propeller shaft electric motor has two armatures of 3 500 hp each at 115 - 140 r.p.m. The layout advantages arising from the use of the electrical transmissions are substantial.

l) Dry cargo vessel of 10 000 tons capacity. Single-screw, single deck of unlimited range. Length 167.7 m. Width 21.5 m.

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Shipbuilding at the All-Union Industrial Exhibition.   122-3-27/30

Displacement 19 400 tons. Draught - 8.75 m. Speed 18.5 knots.
Steam turbine propulsion machinery of 13 000 hp. The hull con-
struction in high-tensile steel gives a saving of 400 tons of
steel per ship.
m) Dry cargo vessel of 10 250 tons displacement. Unlimited
range. Length 129.12 m. Width 15.8 m. Draught 7.5 m. Speed
16 knots. The same propulsion machinery as that under l).
n) Dry cargo diesel-driven river vessel of 2 000 tons capacity.
Length 93.9 m. Width 13.22 m. Displacement 2 740 tons.
Draught 2.8 m. Speed 17 km/hr. Two main direct driving diesel
engines of 450 hp each.
o) Dry cargo diesel-driven vessel of 600 tons capacity. Length
65.7 m. Width 9.2 m. Speed 15 km/hr. Power 300 hp.
p) Diesel electric 3-screw, two-deck passenger vessel. Length
121.4 m. Width 16.8 m. Displacement 2 300 tons. Draught 2.4 m.
Speed 25 km/hr. Three diesel generators of 900 hp each supply
all three electric propulsion motors.
q) 1 200 hp pusher tug for barge trains. Length 40.83 m.
Width 9.46 m. Displacement 490 tons. Draught 2.2 m. Speed
20 km/hr. 12 000 kg push at 12 km/hr. Propelled by two 600 hp
diesel engines.
Card4/8r) River ice-breaker tugboat. Length 48 m. Width 11.8 m.

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Displacement 770 tons. Speed 10 km/hr with a draw bar pull of
10.4 tons. The barge train capacity then amounts to 10 000 tons.
The maximum ice thickness broken at a steady speed is 0.4 m but
2.2 m thick ice can be broken with a running start. Two diesel
generators of 900 hp supply propeller motors of 650 hp each.
s) Train ferry for river crossing. Length 90.66 m. Width
18.31 m. Displacement 3 400 tons. Draught 3.1 m. Speed 21
km/hr under full load. 32 two-axle goods wagons can be loaded.
Four diesel generators of 675 kW each supply two propeller motors
of 1 100 kW each. Two wagon platforms can be lifted 5 m for
loading and unloading. Pneumatic braking provided.
t) Small diesel cargo boats of 80 hp.
u) Motorised river tug of 90 hp.
v) Large cruising launch of 12 m length and 150 hp.
w) Fire engine harbour launch of 1.82 m draught and a speed of
15.7 knots with a centre diesel engine of 450 hp driving the
centre propeller and two outrigger engines of 900 hp each. The
fire engines deliver 1 800 m³/hr of water at 90 m head.
x) Sea-going cruising launch with a wooden hull of 7.4 m, length,
and 2.3 m width. 62 hp engine.
y) General purpose cruising launch. 62 hp engine.
Card5/8z) Tanker lifeboat contains hand-driven propeller.

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Shipbuilding at the All-Union Industrial Exhibition.

(aa) Pleasure launch and collapsible pleasure launch.
length 4.5 m. Wooden hull. 6 - 20 hp.

Auxiliary machinery and equipment shown included the following:
1) Turbo-generator with an inlet controlled two-row impulse wheel
and five pressure stages rotating at 9 800 r.p.m. driving a 400
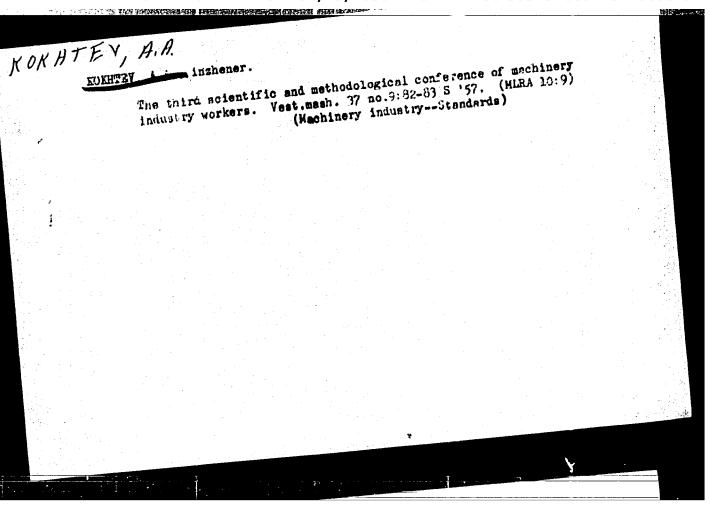kW alternator rotating at 1000 r.p.m. through a double reducing
gear.
2) Free piston diesel compressor unit AK-2 combines a four-stage
piston compressor and a two-stroke single-cylinder diesel. At
an output pressure of 230 kg/cm² and an output of 8 litres/min,
the fuel consumption is 8.8 kg/hr. The total weight is 852 kg.
The unit is started by compressed air from a starting reservoir.
3) A diesel engine alternator, compressor and pump set AГKП-20
of about 10 hp.
4) Electro-hydraulic power steering machines PЭГ8-1 working at
an oil pressure of 135 kg/cm², the maximum torque is 60 ton-metres.
The maximum turning angle is 35° each way. With only one of the
two pumps working the total traverse time is 30 sec.
5) Steering indicator and transmitter, consisting of: a) trans-
mitter-receiver; b) control receiver fixing the indications of
Card6/8 the true position of the rudder; c) rudder position pick-off;

Shipbuilding at the All-Union Industrial Exhibition.   122-3-27/30
    d) junction box. The error is $\pm$ 2°
    6) Automatic control system of a ship's boiler installation
maintains the water level in the boiler drum within $\pm$ 10 mm.
The boiler pressure within $\pm$ 0.5. The combustion air pressure
within $\pm$ 0.75. The liquid fuel pressure within $\pm$ 0.3 - 0.5 kg/cm^2
Maximum deviations during transient changes up to about ten times
those indicated. The restoration of the steady state takes about
1.5 min.
    7) Variable pitch propeller of 10 ton thrust absorbing 1 100 hp
at 600 r.p.m. Diameter of 1.4 m. Complete blade reversal in
15 sec from forward to reverse thrust by an electro-mechanical
control gear.
    8) "Cycle-gyro" (Voith-Schneider type), propeller AKK, absorbs
900 hp at 675 rpm. Pitch diameter of blade centres 1.6 m. Blade
length 0.8 m. Total reversal time for blade control 5 sec.
    9) Cabin equipment and light-signalling devices were shown.
    10) Radar stations ("Stvor" and "Neptun") were demonstrated;
"Stvor reveals vessels of up to 2 000 tons displacement at a
distance of 6 miles and sea buoys at a distance of 0.5 miles.
"Neptune" reveals ships of 1 000 tons displacement at a distance
of not less than 12 miles and sea buoys at a distance of 2.5
Card7/8 miles. The shore is revealed at a distance of 20 miles.

KOKHTEV, A.A.

KOKHTEV _____ inzhener.

The third scientific and methodological conference of machinery
industry workers. Vest.mash. 37 no.9:82-83 S '57. (MLRA 10:9)
(Machinery industry--Standards)

KOKHTEV, A.A

KOZLOV, Mikhail Prokof'yevich; TAYTS, B.A., doktor tekhn.nauk, retsenzent; KOKHTEV, A.A., inzh., red.; SEREBRENNIK, M.Ye., izdatel'skiy red.; ROZHIN, V.P., tekhn.red.

[Gear transmissions in precision instruments] Zubchatye peredachi tochnogo priborostroeniia. Moskva, Gos. izd-vo obor.promyshl., 1958. 392 p.   (MIRA 11:4)

(Gearing)   (Instruments--Transmission devices)

PHASE I BOOK EXPLOITATION   1058

Kokhtev, Aleksandr Andreyevich

Tekhniko-ekonomicheskiye printsipy standartizatsii v mashinostroyenii
   (Engineering and Economic Principles of Standarization in the Machine-
   building Industry) Moscow, Mashgiz, 1958. 417 p. 4,500 copies printed.

Reviewers: Rybkin, A.P., Professor, and Tkachenko, V.V., Candidate of
   Technical Sciences; Ed.: Rusevich, I.M., Engineer; Tech. Ed.:
   Model', B.I.; Managing Ed. for Literature on the Economics and
   Organization of Production (Mashgiz): Saksaganskiy, T.D.

PURPOSE: The book is intended for engineering and technical personnel working
   in industrial plants, design and engineering organizations, and research in-
   stitutes concerned with machine building. It may also be used by vuz instruc-
   tors and personnel of the shipbuilding, instrument-making and electrotechnical
   industries.

COVERAGE: The book deals with a variety of problems relating to the theory and
   practice of standardization in several principal branches of the machine-
   building industry. It constitutes the first attempt to generalize and present

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Engineering and Economic Principles (Cont.)

information contained in a large number of books and articles dealing with
the characteristics and interrelationships of various systems of standard-
ization. It shows how effective the development of standardization is from an
economic viewpoint and how necessary it is for the introduction of new equip-
ment and processes and for plant specialization. Special emphasis is placed on
the development of standardized series of machines, keeping in mind the future
development of the national economy as a whole. Procedures used in coordinating
the standardization operations are discussed. No personalities are mentioned.
There are 501 references of which 283 are Soviet, 14 English and 4 German.

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Engineering and Economic Principles (Cont.)   1058

Ch. X. Principles Underlying the Organization of Operations
        Dealing With Standardization in Machine Building   389

Conclusion   403

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AVAILABLE: Library of Congress

                                        GO/gmp
Card 4/4   1-16/59

Ho Khtev, A.A,

SOV/28-58-5-35/37

AUTHOR: Baykov, A.V.

TITLE: Book Review (Retsenziya)

PERIODICAL: Standartizatsiya, 1958, Nr 5, pp 88 - 90   (USSR)

ABSTRACT: This is a review of the book "The Technical and Economic
                 Principles of Standardization in Mechanical Engineering"
                 (Tekhniko-ekonomicheskiye printsipy standartizatsii v
                 mashinostroyenii) by A.A. Kokhtev, published by Mashgiz
                 in 1958.

                 1. Mechanical engineering--Standards

Card 1/1

SOV/28-59-2-2/26

25(6)
AUTHOR:

Kokhtev, A.A., Engineer

TITLE:

Two Basic Principles of Standardization in Machine Con-
struction(Dva osnovnykh printsipa standartizatsii v mashino-
stroyenii)

PERIODICAL:

Standartizatsiya, 1959, Nr 2, pp 7-11 (USSR)

ABSTRACT:

The results of standardization depend largely on principles
followed by machine-construction workers in developing and
introducing new standards into production processes. The
author singles out two of the most important principles in
this field: one is the so-called "from the part to the
whole" principle and the other the "From the whole to the
part" principle. Standardization in the machine construc-
tion industry was long based on the first principle.
According to this, development of types, dimensions and
technical features of components proceeded in such a way
that machines with the same job to do could be assembled
from these parts with a minimum addition of special
components. This principle was especially developed when
constructing freight cars. The author foresees a further

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25(6)
Two Basic Principles of Standardization in Machine Construction

application of this principle for standardizing many com-
ponents and units, which he divided into 5 groups, accord-
ing to the different branches of machine construction. The
second principle "from the whole - to the part" will also
be applied in industry during the 7-Year Plan. The
Committee of Standards, Measures and Measuring Equipment
plans to develop national standards for parametric series
of machines based on this principle. Parametric standards
determine the types, basic dimensions, parameters and tech-
nical features of all machines essential to the national
economy. When planning a series of such machines, design-
ers can standardize many components and units. The appli-
cation of this principle resulted in the quick rehabilita-
tion of the Soviet inland water fleet after WW II. A
special team of engineers and scientists under the direction
of the Corresponding Member, AS USSR V.Y. Zvonkov established
and standardized various types of vessels as well as the
equipment and motors for these vessels. Rational utiliza-
tion of resources is a secondary standardization principle

Card 2/3

BOZHUKOV, B.P.; BAKHSHIYAN, F.A., prof., doktor tekhn. nauk; BRITKIN, A.S., prof., doktor tekhn. nauk; KOKHTEV, A., insh.

"Mathematical statistics in engineering" by A.M. Dlin. Standartizatsiia 23 no.2:60-61 F '59.   (MIRA 12:1)

1.Nachal'nik otdela tekhnicheskoge kontrolya zavoda "Freser" (for Bozhukov).
                    (Mathematical statistics)

Kokhtev, A.A.

PHASE I BOOK EXPLOITATION   SOV/4576

Kovan, Viktor Mikhaylovich, and Aleksandr Andreyevich Kokhtev

Sborka v mashinostroyenii; ocherk istorii rasvitiya (Assembling in Machine Build-
   ing; History of Development) Moscow, Izd-vo AN SSSR, 1960. 71 p. Errata
   slip inserted. 3,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut istorii yestestvoznaniya i
   tekhniki. Tech. Eds.: Ye.V. Makuni, and K.A. Kolokol'nikov.

PURPOSE: The book is intended for engineers and other personnel interested in
   problems of machine assembly.

COVERAGE: The book gives a historical review of the development of assembly
   processes in machine building, based on Soviet and non-Soviet practice.
   Concrete examples of automation of the assembly process are given, and the
   difficulties of machine assembly mechanization discussed. Prospects of future
   development are indicated. No personalities are mentioned. There are 36
   references, all Soviet.

TABLE OF CONTENTS:

Card 1/2

VASIL'YEV, Vitaliy Zakharovich; GEORGIYEVSKIY, Nikolay Nikolayevich
[deceased]; DUBYAGO, Andrey Dimitriyevich [deceased]; KOKETKV,
Andrey Aleksandrovich; TAUROK, Viktor Grigor'yevich [deceased];
TSATSKIN, Vitaliy Semenovich; SHAPOSHNIKOV, Kirill Aleksandrovich;
MUSINYAN, T.M., inzh., red.; TAIROVA, A.L., red.izd-va; TIKHANOV,
A.Ya., tekhn.red.

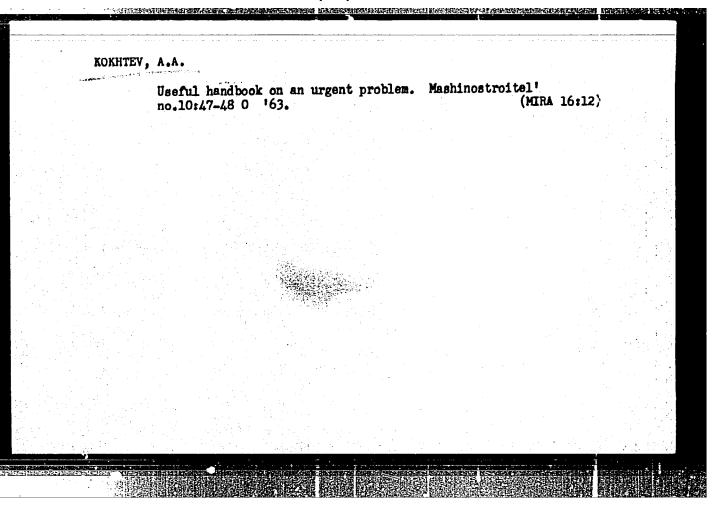[Reference tables for machine parts] Spravochnye tablitsy po
detaliam mashin. Izd.4, ispr. i dop. Moskva, Gos.nauchno-tekhn.
izd-vo mashinostroit.lit-ry. Pt.1. 1960. 615 p.
(MIRA 14:1)

(Machinery--Standards)

KOKHTEV, A.A.; RYBKIN, A.P., prof., retsenzent; BEYZEL'MAN, R.D.,
    insh., red.; EL'KIND, V.D., tekhn. red.

[Technical and economic fundamentals of standardization in
the machinery industry] Tekhniko-ekonomicheskie osnovy stan-
dartizatsii v mashinostroenii. Izd.2., perer. i dop. Mo-
skva, Mashgiz, 430 p.   (MIRA 16:10)
        (Machinery industry--Standards)

KOKHTEV, A.A.

      Manual on standardization. Standartizatsiia 27 no.9:57-58 S
'63.

(MIRA 16:10)

KOKHTEV, A.A.

Useful handbook on an urgent problem. Mashinostroitel'
no.10:47-48 O '63.   (MIRA 16:12)

KOKHTEV, Aleksandr Andreyevich; ZVONKOV, V.V., zasl. deyate?'
        nauki i tekhniki RSFSR, retsenzent; RYBKIN, A.P., prof.,
        retsenzent; RAZUMOV, I.M., prof., doktor ekon. nauk,
        retsenzent; SAMSONOVA, M.T., red.

[Fundamentals of standardization and normalization] Osnovy
standartizatsii i normalizatsii. Moskva, Vysshaia shkola,
1965. 195 p.   (MIRA 18:5)

1. Chlen-korrespondent AN SSSR (for Zvonkov). 2. Predseda-
tel' Tekhniko-ekonomicheskogo soveta Moskovskogo sovnarkho-
za (for Rybkin). 3. Rukovoditel' kafedry organizatsii, pla-
nirovaniya i ekonomiki mashinostroitel'nogo proizvodstva
Moskovskogo vysshego tekhnicheskogo uchilishcha imeni N.E.
Baumana (for Razumov).

VASIL'YEV, V.Z.[deceased]; KOKHTEV, A.A.; TSATSKIN, V.S.;
    SHAPOSHNIKOV, K.A.; MUSINYAN, T.M., inzh., red.

[Reference tables on machine parts in 2 volumes] Spra-
vochnye tablitsy po detaliam mashin v 2-kh tomakh. Moskava,
Mashinostroenie. Vol.1. 1965. 716 p.   (MIRA 18:8)

KOKHAREVA, K.A.

Relationship between vitamin Bl, cocarboxylase, pyroacetic
acid, lactic acid, and inorganic phosphorus in hypertension
Tr. Akad. med. nauk SSSR. Vol.20:269-281 1952.   (CIML 25:5)

1. Of the Institute of Therapy (Director -- A.L. Myasnikov,
Active Member AMS USSR), Academy of Medical Sciences USSR.

RASKATOV, V.M., insh.; KOKHTEV, A.A.; LELYANOV, V.A.; BESSONOVA,
N.F.; VETS, D.A.; KARABANOVA, L.T.; SILANT'YEV, M.G.;
SITNICHENKO, A.I.[deceased]; CHYENKOV, V.S.; YARKOV, A.M.,
insh., retsenzent; GARANKINA, S.P., red.izd-va; TIKHANOV,
A.Ya., tekhn. red.

[Brief handbook on materials used in the machinery industry]
Kratkii spravochnik po mashinostroitel'nym materialam. Pod
obshchey red, V.M.Raskatova. Moskva, Moskgiz, 1963. 440 p.
                                        (MIRA 16:7)

            (Materials)

VASIL'YEV, Vitaliy Zakharovich; GEORGIYEVSKIY, Nikolay Nikolayevich
[deceased]; DUBYAGO, Andrey Dmitriyevich [deceased]; KOKHEL, Andrey
Aleksandrovich; TAUROK, Viktor Grigor'yevich [deceased]; TSATSKIN,
Vitaliy Semenovich; SHAPOSHNIKOV, Kirill Aleksandrovich; MUSINYAN,
T.M., inzh., red.; TAIROVA, A.L., red.izd-va; TIKHANOV, A.Ya.,
tekhn.red.

[Reference tables for machine parts] Spravochnye tablitsy po deta-
liam mashin. Izd.4., ispr. i dop. Moskva, Gos.nauchno-tekhn.izd-vo
mashinostroit.lit-ry. Pt.2. 1961. 688 p.

(MIRA 14:4)

(Machinery--Tables, calculations, etc.)

KOKHTEV, N.A.

Treatment of nonparasitic sycoses. Vest. vener. no.2:44 Mar-Apr 1951.

(CLML 20:9)

1. Of the Skin Division (Head--Honored Physician RSFSR N.A. Lebedev) and of the Oblast Venereal Dispensary (Head Physician--L.K. Maslen-kova), Murmansk Oblast Hospital. 2. Treatment with penicillin.

ACCESSION NR: AT4005966

S/2755/63/000/004/0149/0159

AUTHOR: Yevstyukhin, A. I.; Godin, Yu. G.; Kokhtev, S. A.; Suchkov, I. I.

TITLE: Study of alloys of the rhenium carbon system

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chisty*kh metallov, no. 4, 1963, 149-159

TOPIC TAGS: rhenium carbon alloy, rhenium carbon alloy composition, rhenium carbon alloy property, alloy melting point, alloy microstructure, rhenium carbon phase diagram, rhenium carbon system

ABSTRACT: The interaction between Re and C and some evidence for the development of stable rhenium carbide are discussed. Spectrally pure carbon rods 5 mm in diameter and powdered Re containing 99.95% Re, 0.007% Al, 0.004% Fe, 0.008% K, 0.007% Ca, <0.001% Cu, <0.0005% Na, <0.0001% Ni and 0.005% Mo were used as basic components for making alloys by two methods. When the C content was > 50 at. %, the mixed Re and carbon powders were briquetted under a pressure of 35-45 metric tons, the moldings were clinkered in vacuum resistance furnaces at 1800 - 2000 C and were remelted in arc furnaces with an argon atmosphere. When the amount of C was low, the powdered Re with graphite pieces was clinkered without pressure in arc furnaces with an argon atmosphere. The melting point of the
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ACCESSION NR: AT4005966

samples was determined with an OP-48 optical pyrometer. Heating at 2000C in a vacuum of 1.10^{-4} mm showed an absorption value of 50 -60C. Further tests included annealing at 1900 - 2200C and oil hardening in a vacuum of 10^{-4}mm. Standard microsections were prepared. The structure of the alloys was developed by etching, the powdered alloy was examined by x-ray, and the macro- and micro-hardness were determined. X-ray analysis of the graphite separated from cast alloys was used to determine the presence or absence of Re solubility in C. Increasing the amount of C lowers the melting point of Re-C alloys. Those with 0.35 wt. % C have a common horizontal solidus line at 2500C. Microphotography of these solid alloys indicates that their structure varies with the C content. Alloys with 1.3% C have a eutectic structure. A lowering of the quenching temperature to 1900C produces disappearance of the graphite needles and their substitution by white formations. Visual comparison of the roentgenograms of pure Re, C, and Re-C alloys shows the presence of a new ξ phase. X-ray examination of the alloys showed the absence of solubility of Re in C. The hardness of cast and quenched alloys increases with the C content up to 0.5 weight %, after which it decreases. These effects of the C concentration in alloys are explained and the properties of the Re-C system are tabulated. On the basis of these findings, the authors constructed the partial phase diagram shown in Fig. 1 of the Enclosure. This shows the presence of rhenium carbide, confirmed by the lines of a new ξ phase in

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ACCESSION NR: AT4005966

roentgenograms. Rhenium carbide is probably stable at 1900 - 2200C. Increasing the C in alloys increases the quantity of bound carbon, also indicating a chemical bond. In microstructures, the Re-C appears in the form of a white edge of graphite needles, which may explain the extreme hardness of alloys with 35.7-37.1 at. % C. Orig. art. has: 13 figures and 3 tables.

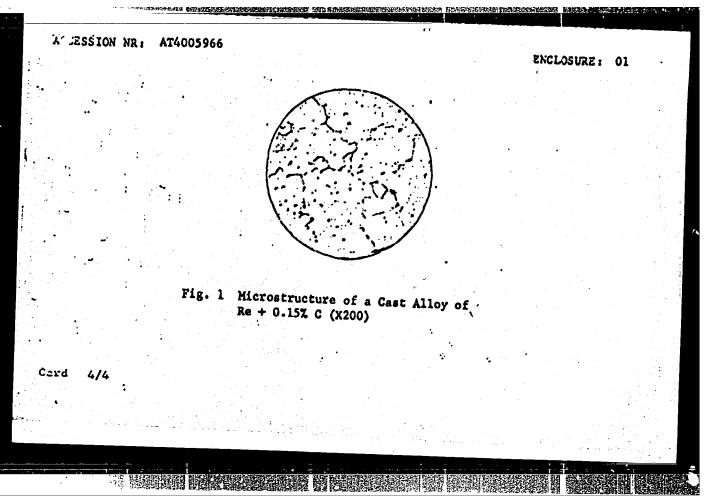ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Engineering Physics Institute)

SUBMITTED: 00

SUB CODE: MM

DATE ACQ: 17Jan64

NO REF SOV: 000

ENCL: 01

OTHER: 005

Card 3/4

ACCESSION NR: AT4005966

ENCLOSURE: 01

Fig. 1 Microstructure of a Cast Alloy of
        Re + 0.15% C (X200)

Card 4/4

KASIMTSEV, A.S. (Karabanovo, Vladimirskoy oblasti, ul. Mira, 10, kv.9);
    KOKHTOV, V.K.

Excision of pheochromocytoma in a small surgical ward. Vest. khir.
92 no.6:125-127 Je '64.   (MIRA 18:5)

1. Iz khirurgicheskogo otdeleniya (zav. - A.S. Kasimtsev) Karaba-
novskoy mediku-sanitarnoy chasti (glavnyy vrach - G.A. Fedorov)
Vladimirskoy oblasti.

KOKHV, F. F.

Horse Breeding

Share of native horse breeds in the formation of the Tori breed. Konevodstro 22 No. 6,
1952.

9. Monthly List of Russian Accessions, Library of Congress, _Se:tember__1953, Uncl.

2

3454   KOKHVER, E.

Setskiy sklandoy stul: stol. M., KOIZ, 1954 8s. s ill. 21 sm (Tsentr.
sovet. promysl. Kooperatsii SSSR Tekhn Upr. Obmen Proizvod tekhn.
opytom. luchshiye obr aztsy izdeliy shirokogo potrebleniya. 24) 1000
ek3 Bespl. Avt. ukazan v. kontse teksta (54-14164ZH) 674.23

YUGOSLAVIA

Dragomir HLADENOVIC, Olga KOKIC and Konstantin NIKOLIC, Gynecologic and Obstetric Hospital (Ginekolosko-akuarska bolnica); Head (Upravnik) Prof Dr Petar KOSTIC, Belgrade.

"Our Experiences with the Fuchs Technique of Interrupting Advanced Pregnancy Transvaginally."

Belgrade, Srpski Arhiv za Celoku no Lekarstvo, Vol 90, No 9, Sept 1961; pp 847-850.

Abstract (French summary modified): Description of surgical details of method, discussion of it in the context of own experience on 20 patients, mostly between 3½ and 5 months of pregnancy. Excellent results in all except 2 in whom sloppy surgical technique led to vesical lesions. No references.

1/1

MIRKOVIC, Aleksandar; BROCIC, Mladen; KOKIC, Olga; VUKOTIC-GRUBAC, Milena;
JEVREMOVIC, Milan

Current views on curettage in early puerperal metrorrhagia. Srpski
arh. celok. lek. 93 no.1:69-73 Ja '65.

1. Ginekolosko-akuserska klinika Medicinskog fakulteta Univerriteta
u Beogradu (Upravnik: prof. dr. Bosiljka Milosevic).

KOKICHEV V·N·

KOKICHEV, V.N.; PTITSYN, O.A.; SHAVLYUGA, N.I., kandidat tekhnicheskikh
nauk, dotsent, redaktor; DLUGOKANSKAYA, Ye.A., tekhnicheskiy redaktor

[Gear-cutting machines; reference manual] Zuboreznye stanki;
spravochnoe posobie. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
stroitel'noi lit-ry, 1954. 355 p.   (MIRA 8:4)
        (Gear-cutting machines)

KOKICHEV, Valentin Nikolayevich; GINZBURG, Ye.G., inzhener, retsenzent;
KOLCHIN, N.I., professor, redaktor; TURETSKIY, I.Yu., kandidat
tekhnicheskikh nauk, redaktor; SHAVLYUGA, N.I., dotsent, redaktor;
VASIL'YEVA, V.P., redaktor izdatel'stva; POL'SKAYA, R.G., tekhni-
cheskiy redaktor

[Methods of finishing gear wheels].Metody otdelki zubchatykh koles.
Pod red. N.I.Kolchina. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
stroit. lit-ry, 1956. 49 p. (Bibliotechka suboresa-novatora, no.8)
        (Gear cutting)   (MLRA 10:3)

BELYAYEV, Georgiy Sergeyevich; KOKICHEV, V.N., redaktor; KAMOLOVA, V.M.,
    tekhnicheskiy redaktor.

[Technology of manufacturing worm and cog gears in building ship
machinery] Tekhnologiia proizvodstva cherviachnykh i zubchatykh
peredach v sudovom mashinostroenii. Leningrad, Gos. soiuznoe izd-vo
sudostroit. promyshl., 1956. 178 p.   (MIRA 9:6)
                    (Gearing) (Naval engines)

KOKICHEV, V-N.

Ptitsyn, Gennadiy Anatol'yevich and Kokichev, Valentin Nikolayevich

Zuboreznyye stanki; spravochnoye posobiye (Gear-cutting Machines; a Handbook) 2d ed., enl. and rev. Moscow, Mashgiz, 1957. 448 p. 22,000 copies printed.

Reviewer: Fedotenok, A.A., Candidate of Technical Sciences, Docent; Ed.: Shavlyuga, N.I., Candidate of Technical Sciences, Docent; Ed. of Publishing House: Borodulina, I.A. Tech. Ed.: Speran-skaya, O.V.; Managing Ed. of Mashgiz, Leningrad Branch: Bol'shakov, S.A.

PURPOSE: The book is intended for technologists working in the field of gear-cutting, as well as for foremen and set-up men for gear-cutting machines. The book is recommended as a textbook for technical schools.

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Gear-cutting Machines; a Handbook   405

COVERAGE: This textbook describes methods and formulas for setting-up of gear-cutting machines. Dimensions necessary for the design of accessories, standard designs of mounting attachments and mandrels, as well as basic data for the selection of gear-cutting tools are given. The publication of the first edition of this textbook on gear-cutting tools indicated that such a book is indis-pensable to technologists and foremen employed in the field of gear-cutting as well as to designers planning jigs and fixtures of gear-cutting machine tools. This book found wide application in plants and planning organizations. In revising the material for the second edition, the authors preserved its basic contents and character of presentation. Only outdated material was excluded and the remaining material was reviewed and corrected. Separate chapters were enlarged to include: data on new models of foreign and domestic gear-cutting machines; extent of technological precision of machine tools for cutting spiral bevel gears using the "single cutter" method; data on adjusting machine tools for gear hobbing; recommendations on the

Card 2/14

405

Gear-cutting Machines; a Handbook

selection of cutting speeds; requirements which precision gear-cutting machines should incorporate in accordance with latest data on foreign techniques, etc. There are 18 Soviet references. No personalities are mentioned.

Card 3/14

KOKICHEV, Valentin Nikolayevich; PAZYUK, Ye.I., nauchnyy red.; FOMICHEV,
A.G., red.; KONTOROVICH, A.I., tekhn.red.

[Gear-finishing machines; manual] Zubootdelochnye stanki;
spravochnoe posobie. Leningrad, Gos.soiuznoe izd-vo sudostroit.
promyshl., 1960. 242 p.   (MIRA 13:6)
              (Gear-cutting machines)

BELYAYEV, Georgiy Sergeyevich; FEDOROV, N.A., inzh., retsenzent; TISHKO-
VETS, I.V., inzh., retsenzent; KOKICHEV, V.N., nauchnyy red.;
OZEROVA, Z.V., red.; SHISHKOVA, L.M., tekhn. red.

[Mechanization of fitting and assembling operations in marine
engineering] Mekhanizatsiia slesarno-sborochnykh i montazhnykh
rabot v sudovom mashinostroenii. Leningrad, Gos. soiuznoe izd-
vo sudostroit. promyshl., 1961. 267 p.   (MIRA 14:6)
        (Marine engineering) (Shipfitting)

PTITSYN, Gennadiy Antonovich; KOKICHEV, Valentin Nikolayevich; IVANOV, A.F.,
nauchnyy red.; SOKOLOV, K.M., inzh., retsenzent; KLIMINA, Ye.V.,
red. izd-va; KOROVENKO, Yu.N., tekhn. red.

[Calculation and reconditioning of used gears] Raschet i izgotovlenie
zubchatykh peredach v remontnom dele; spravochnoe posobie. Leningrad,
Gos. soiuznoe izd-vo sudostroit. promyshl., 1961. 518 p.
(MIRA 14:8)

(Gearing—Maintenance and repair)

RECHISTER, Volodar Dmitriyevich; BURIK, Valentin Vasil'yevich; IVANOV,
A.F., inzh., retsenzent; KOKICHEV, V.N., nauchnyy red.; GOLUBEVA,
N.P., red.; SHISHKOVA, L.M., tekhn. red.

[Maintenance and repair of auxiliary turbomachinery mechanisms]
Remont vspomogatel'nykh turbomekhanizmov. Leningrad, Gos. soiuznoe
izd-vo sudostroit. promyshlennosti, 1961. 215 p. (MIRA 14:11)
(Turbomachines—Maintenance and repair)

PROKOF'YEV, Konstantin Alekseyevich; SAMSONOV, Yuriy Artem'yevich;
CHERNOV, Sergey Konstantinovich; MOISEYEV, A.A., prof.,
doktor tekhn.nauk, retsenzent; TRUBTAYEV, V.V., kand.tekhn.nauk,
retsenzent; KOKICHEV, V.N., nauchnyy red.; VLASOVA, Z.V., red.;
TSAL, R.K., tekhn.red.

[Vibrations in the parts of marine turbomachine units] Vibratsiia
detaloi sudovykh turboagregatov. Leningrad, Gos.soiuznoe izd-vo
sudostroit.promyshl. Vol.1. 1961. 550 p.

(MIRA 15:2)

(Marine turbines--Vibrations)

KOKICHEV, Valentin Nikolayevich; SOKOLOV, K.M., inzh., retsenzent;
IVANOV, A.F., nauchnyy red.; NIKITINA, R.D., red.; KRYAKOVA,
D.M., tekhn. red.

[Sealing devices in the machinery industry] Uplotniaiushchie
ustroistva v mashinostroenii. Leningrad, Sudpromgiz, 1962. 207 p.
                                            (MIRA 15:7)
                    (Sealing (Technology))

L 26403-66   EWP(c)/EWP(k)/EWT(d)/EWP(h)/ETC(m)-6/EWP(l)/EWP(v)

ACC NR: AM5025914	Monograph	UR/

Kokichev, Valentin Nikolayevich

Nonspherical joints in shipbuilding (Nekruglyye soyedineniya v sudovom mashinostroyenii)
  Leningrad, Izd-vo "Sudostroyeniye", 1965. 116 p. illus tables. 1450 copies printed.

TOPIC TAGS: machine part, joint, nonsperical joint, nonsperical shaft, nonsperical
  orifice, machine part joining, shipbuilding

PURPOSE AND COVERAGE: This book is intended for designers and production engineers
  in the shipbuilding industry. The book reviews joints made without keys and slots
  of shaped nonspherical machine parts, the geometrics and kinematics of such joints,
  their production, methods of control, and the technological and economic advantages
  of such joints in shipbuilding.

TABLE OF CONTENTS:

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L 26403-66

ACC NR: AM5025914

SUB CODE: 13/ SUBM DATE: 16Oct64/
Card 2/2

KOKILASHVILI, V.M.

Some notes concerning Fourier's coefficients and classes of func-
tions. Soob.AN Gruz.SSR 28 no.1:3-8 Ja '62.   (MIRA 15:4)

1. Akademiya nauk Gruzinskoy SSR Tbilisskiy matematicheskiy
institut imeni A.M.Razmadze. Predstavleno akademikom V.D.
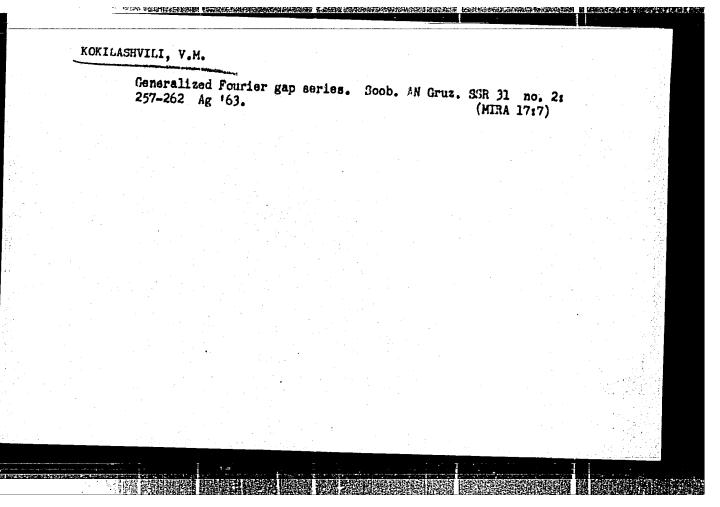Kupradze.

(Functions, Continuous)

KOKILASHVILI, V.M.

Inverse theorem of the constructive theory of functions in an $L_p (1 < p < +\infty)$ space. Trudy Mat. Inst. AN Gruz. SSR 29:183-189 '63.
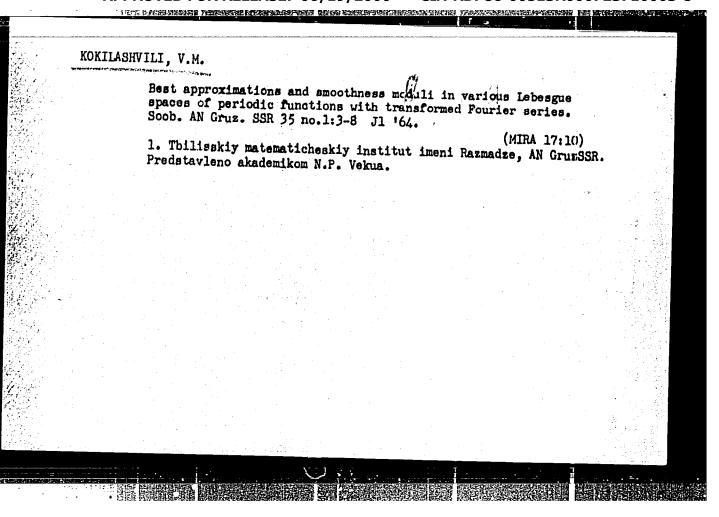(MIRA 17:12)

KOKILASHVILI, V.M.; KOKILASHVILI, V.M.

Best approximation of a function and Fourier-Lebesgue coefficients. Soob. AN Gruz. SSR 30 no.3:265-272 Mr '63.

(MIRA 17:6)

1. Akademiya nauk Gruzinskoy SSR, Tbilisskiy matematicheskiy institut imeni A.M. Razmadze. Predstavleno akademikom N.P. Vekua.

Soobstcheniya

KOKILASHVILI, V.M.

Generalized Fourier gap series. Soob. AN Gruz. SSR 31 no. 2:
257-262 Ag '63.
(MIRA 17:7)

KOKILASHVILI, V.M.

Best approximations and smoothness moduli in various Lebesgue
spaces of periodic functions with transformed Fourier series.
Soob. AN Gruz. SSR 35 no.1:3-8   Jl '64.

(MIRA 17:10)
1. Tbilisskiy matematicheskiy institut imeni Razmadze, AN GruzSSR.
Predstavleno akademikom N.P. Vekua.

KOKILASHVILI, V.M.

A functional space and Fourier coefficients. Soob. AN Gruz.
SSR 35 no.3:523-530 S '64.   (MIRA 17:11)

1. Tbilisskiy matematicheskiy institut imeni Razmadze AN GruzSSR.
Predstavleno akademikom V.D. Kupradze.

KOKILASHVILI, V.M.

Inverse theorem in structural theory of functions in Orlicz
spaces. Soob. AN GruzSSR 37 no.2:263-270 F '65.

(MIRA 18:3)

1. Tbilisskiy matematicheskiy institut im. A.M. Razmadze AN GruzSSR,
Tbilisi. Submitted April 2, 1964.

KOKILASHVILI, V.M.

Some properties of adjoint functions of two variables.
Soob. AN Gruz. SSR 40 no.2:263-270 N '65.

(MIRA 19:1)

1. Tbilisskiy matematicheskiy institut imeni Razmadze AN GruzSSR.
Submitted Nov. 25, 1964.

L 37775-66   EWT(J)/T/EWP(1)   IJP(c)

ACC NR: AP6028851

SOURCE CODE: UR/0251/66/041/003/0529/0534

AUTHOR: Kokilashvili, V. M.

ORG: Tbilisi Mathematics Institute im. A. M. Razmadze, AN GruzSSR (Tbilisskiy matematicheskiy institut AN GruzSSR)

TITLE: Exact order of optimal approximations of analytic functions representable by generalized lacundary series with respect to Faber's polynomials

SOURCE: AN GruzSSR. Soobshcheniya, v. 41, no. 3, 1966, 529-534

TOPIC TAGS: polynomial, series, analytic function, approximation, continuous function

ABSTRACT: It is shown that particular sums give an exact order of best approximations of functions analytic in the region D and continuous in the closed region D, representable by Faber's polynomial series and with the condition that $\{n_k\}_k^\infty = 1$ may be represented as a finite theory-of-sets sum of lacunary sequences. It is assumed (1) that D is a singly-connected region with the boundary Γ for which the angle $\phi(s)$ between a tangential and fixed direction has a specified modulus of continuity and (2) that the function $W = \phi(z)$ conformally maps the complement to the region D onto the region $|W| > 1$ such that $\phi(\infty) = \infty$, $\lim\limits_{z \to \infty} \phi(z) = \infty$. On this basis the necessary and sufficient condition for definite properties of the function analytic in the region D and continuous in the closed region D is stated. This paper was presented by Academician G. S. Chogoshvili on 26 March 1965. Orig. art. has: 10 formulas. [JPRS: 36,364]

SUB CODE: 12 / SUBM DATE: 26Mar65

Card 1/1

BASS-SHADKHAN, Kh.; TSIRITE, L. [Cirite, L.]; KOKILEVA, L.

Dependence of the biosynthesis of vitamin B_{12} involving yeastlike
organisms Candida sp.Kp.9 on certain factors of external media.
Vestis Latv ak no.3:89-92 '62.

1. Institut eksperimental'noy i klinicheskoy meditsiny AN Latviyskoy
SSR.

AUTHORS: Chirkov, A. K., Kokin, A. A.   SOV/56-35-1-6/59

TITLE: Paramagnetic Resonance in Weak Fields on Free Radicals
(Paramagnitnyy rezonans v slabykh polyakh na svobodnykh
radikalakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
Vol 35, Nr 1, pp 50 - 55 (USSR)

ABSTRACT: In the present paper the shape of the electron paramagnetic
resonance absorption line of crystalline $\alpha\alpha$-diphenyl-β-
picryl-hydrazil $((C_6H_5)_2N-NC_6H_2(NO_2)_3)$ is investigated at
room temperature and weak fields. Already in earlier papers
(Refs 1-4) the influence exercised by dipole-dipole inter-
action on the shape of the absorption line was investigated:
Anderson and Weiss (Ref 5) investigated the equation of
the absorption curve near its maximum, taking dipole-dipole
as well as the ordinary Coulomb (Kulon) interaction into
account. In reference 1 the quantum-mechanical theory
of the shape of the line was developed. Theoretical reasoning
in this paper is based upon reference 1. The experimental
investigation was carried out by the generator method (block

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Paramagnetic Resonance in Weak Fields on Free Radicals   SOV/56-35-1-6/59

scheme Fig 1), where the sample is in a Helmholtz
(Gel'mgol'ts) coil. The generator operated with 28
megacycles at $\sim$ 400 mV, the main voltage at the generator
showed changes of not more than 10 mV near the resonance.
Figure 2 shows an oscillogram of a resonance pulse at
$H_\bullet = 10$ Oe, $H_o = 1,76.10^8$ c , $\triangle H = 0,85 \pm 0,01$ Oe ($\triangle H$
compared with Refs 7,9,10; $\triangle H = 0,87$ and $0,88$ Oe,respectively).
There is good agreement with theory. For a number of new
radicals the Curie (Kyuri) points are calculated
asymptotically (e.g. Cl:$3,8^\circ$K, Br:$1,1^\circ$K, OCH_3:$2,0^\circ$K and
F:$1,2^\circ$K). In conclusion the authors thank G.V.Skrotskiy
for his discussions and advice, and R.O. Matevosyan for
the preparation test radicals. There are 3 figures, 1
table, and 13 references, 2 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic
Institute)

SUBMITTED: February 19, 1958
Card 2/3

24(3)
AUTHORS: Skrotskiy, G. V., Kokin, A. A.   SOV/56-36-1-23/62

TITLE: A System of Magnetic Moments in a Weak Variable Magnetic
            Field (Sistema magnitnykh momentov v slabom peremennom
            magnitnom pole)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
            Vol 36, Nr 1, pp 169-175 (USSR)

ABSTRACT: The authors investigate a system of magnetic moments with
            electric exchange interactions and with magnetic
            dipole-dipole interactions, which is located in the external
            magnetic field $\vec{H}_0 + \vec{h}(t)$. By employing the method of Kubo
            and Tomita (Ref 5), they deduce the equation of motion of the
            magnetization vector for a system of magnetic moments which
            are connected with electric exchange interactions and also
            with weak magnetic dipole-dipole interactions. The coefficients
            figuring in these equations can be calculated for concrete
            cases. First, an expression is defined for the component of
            the magnetization vector. The calculations are given step by
            step. For calculating the components $M_\alpha(t)$ of the magnetization

Card 1/2   it is sufficient to determine the components of the tensor

A System of Magnetic Moments in a Weak Variable   SOV/56-36-1-23/62
Magnetic Field

function $G_{\alpha\beta}(\tau)$ of relaxation. For calculating the components of $G_{\alpha\beta}$, the expression for the operator $\hat{M}_{\alpha}(t)$ is expanded into a series. The expression found for the magnetization $\hat{M}_{\alpha}$ determines its time dependence in weak variable fields. Finally, the authors deduce the differential equation for the components of the magnetization vector. There are 8 references, 1 of which is Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: June 23, 1958

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24(3),12(0)
AUTHORS: Skrotskiy, G. V., Kokin, A. A.   SOV/56-36-2-20/63

TITLE: On the Theory of Nuclear Paramagnetic Resonance in Liquids
             (K teorii yadernogo paramagnitnogo rezonansa v zhidkostyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
             Vol 36, Nr 2, pp 481-487   (USSR)

ABSTRACT: The quantum theory of magnetic resonance absorption in radio-
             frequency fields developed by Kubo and Tomita (Ref 1) is used
             by the authors of this paper for the purpose of describing
             nuclear paramagnetic resonance in liquids; the thermal motion
             of the molecules, which leads to narrowing of the absorption
             line is taken into account on the basis of the diffusion theory.
             Already in reference 2 the influence exercised by the anisotropy
             of the g-factor upon line shape was investigated by means of
             this method, and in reference 3 this was done with respect to
             the influence of exchange interaction on hyperfine structure in
             electronic paramagnetic resonance. A. K. Chirkov and A. A. Kokin
             by this method determined the line shape of electronic
             resonance absorption in powders of free radicals (Ref 4).
             G. V. Skrotskiy and Kokin (Ref 5) introduced an equation of

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On the Theory of Nuclear
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motion for the magnetization vector. Thermal motion was taken into account by reference 6 (as intranslatory-reference 1) by $f(t) = \exp(- |t| /\tau_0)$, which describes the Braun and rotational motion. The correlation time τ_c is for rotational motion a function of temperature, motion, and dimensions of molecules, for translatory motion it depends on the mutual position of the paramagnetic molecules or ions. Basing upon these assumptions and by using the results of the previous paper (Ref 5), the authors in the following investigate the transversal and longitudinal relaxation time in liquids on the basis of the diffusion theory, assuming that the sample is located in a constant magnetic field $H_0 = H_z$ and in a weak radio-frequency field $\vec{h}(t)$. For the relaxation times $T_\parallel$ and $T_\perp$, e.g. for water at 20°C with $a = 1.45 \cdot 10^8$ cm, $b = 1.54 \cdot 10^{-8}$ cm, $\tau_c = 0.32 \cdot 10^{-11}$ sec and $V/N = 30 \cdot 10^{-24}$ cm^3 (Ref 8), one obtains

with (36) $\quad \dfrac{1}{T} = \dfrac{1}{T_\perp} = \dfrac{1}{T_\parallel} = \dfrac{3}{2} g^4 \mu_0^4 \hbar^{-2} \tau_c (\dfrac{6\pi}{5} \dfrac{N}{V} a^{-3}+b^{-6}); \quad \tau_0 \omega_0 \ll 1,$

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which differs from the formula obtained in reference 6 only by numerical coefficients, $T - T_{||} - T_{\perp} = 3$ sec, which is in agreement with the experimentally determined times $T_{||} - T_{\perp} = (3.6 \pm 0.4)$ sec. There are 2 figures and 9 references, 3 of which are Soviet.

SUBMITTED: June 23, 1958 (initially) and October 28, 1958 (after revision)

Card 3/3

24(5),5(4)
AUTHOR:

SOV/56-36-2-24/63

Kokin, A. A.

TITLE: On the Theory of Paramagnetic Electron Resonance in
            Electrolyte Solutions (K teorii paramagnitnogo elektronnogo
            rezonansa v rastvorakh elektrolitov)

ABSTRACT: In order to investigate paramagnetic electron resonance in
             solutions the same methods are usually (Ref 1) employed as
             are used for the purpose of investigating paramagnetic nuclear
             resonance which, however, do not take the particular features
             of the former phenomenon into account. In nuclear resonance
             the interaction of the magnetic moments of the nuclei in the
             molecule and between the molecules of the liquid plays the
             most important part, whereas in electron resonance it is played
             by the local electric field in the neighborhood of the ion.
             Influencing of the breadth of the magnetic electron resonance
             line by Brown's (Broun) translatory motion of the molecules of
             the liquid is brought about in the same manner as in nuclear
             resonance. The influence exercised by the asymmetry of the
             local electric field is taken into account (variations of the

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Electrolyte Solutions

direction of the field symmetry axes are represented as Brownian
rotational movement). In consequence of the interaction between
this symmetric field and the electron cloud of the ion and as
a result of the existence of spin-orbit and spin-spin inter-
action, the degeneration of the levels in the system of
coordinates vanishes partly or entirely, according to the
symmetry of the local field and the parity of the number of
electrons. In the laboratory system a broadening of the
absorption line is a consequence of this splitting up. In the
majority of the solid salts investigated the local field can be
represented in form of two combinations: the strong field of
cubic symmetry and the weak field of trigonal or tetragonal
symmetry. The author derives formulae for the transverse and
longitudinal relaxation times and the correction to the gyro-
magnetic ratio. Hyperfine structure is not taken into account
in this connection. For weak fields, $\omega_0 \tau_0 \ll 1$, the formulae

(11) - (13) are obtained for $\dfrac{1}{T_\perp}$, $\dfrac{1}{T_\parallel}$, and δ^* , and for strong

Card 2/3   fields the analogous formulae (14) - (16) are obtained. It was

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found that, just like in the case of nuclear resonance , T_{II} has a minimum in the range $\omega_0 \tau_c \sim 1$. In the case of aqueous solutions with a concentration of 0.1 mol/liter of the ions Cr^{+++}, VO^{++}, Cu^{++}, and Mn^{++} the line width at room temperature and $\omega_0 \sim 7.8 \cdot 10^7 sec^{-1}$ is 30 Oe (Mn^{++}) and 200 Oe (Cr^{+++}). For Mn^{++} we obtain with $a = 2.4 \cdot 10^{-8} cm$, $g = 2$, $S = 5/2$ according to formula (11) $\frac{1}{T_{\text{II}}} = 0.25 \tau_c \frac{N}{V} + (64/15)D^2 \tau_c$. Experimentally (Ref 6) $\tau_c = 1 \cdot 10^{-11}$, $D = 0.08 cm^{-1}$ is obtained. The author finally thanks^c G. V. Skrotskiy for discussions. There are 6 references, 3 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: July 4, 1958 (initially) and October 28, 1958 (after revision)

Card 3/3

24(3)   SOV/56-36-3-49/71
AUTHORS: Skrotskiy, G. V., Kokin, A. A.

TITLE: On the Disordered Free Precession of the Magnetic Moments
                 of Atomic Nuclei (O neupryadochennoy svobodnoy pretsessii
                 magnitnykh momentov atomnykh yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
                 Vol 36, Nr 3, pp 932 - 933 (USSR)

ABSTRACT: The authors of the present paper ("Letter to the Editor")
                 theoretically investigated the precession motion of magnetic
                 nuclear moments in a sample that was subjected to the action
                 of a magnetic field H_o. The sample was assumed to be in a
                 pick-up coil and to be magnetized vertical to H_o. In the case
                 of a sufficient homogeneity of the H_o-field signal damping
                 (increase of noise in the circuit) causes fluctuations of the
                 voltage at the end of the pick-up coil; these fluctuations
                 are determined, on the one hand, by the thermal noise and,
                 on the other, by magnetization fluctuations of the sample.
                 Whereas a formula was already derived (Ref 1) for the spectral
Card 1/2   density of the mean voltage square V_T^2, caused by the thermal

On the Disordered Free Precession of the Magnetic Moments SOV/56-36-3-49/71
of Atomic Nuclei

noise in the pick-up circuit, the authors in the present
paper derive analogous formulae describing voltage fluctua-
tions caused by magnetization fluctuations (V_M^2). It was

found possible, in the case of conditions being favorable,
to separate the signal of disordered free precession of
magnetic nuclear moments from the thermal noise spectrum.
The ratio

$\eta = (V_M^2)_\gamma / (V_T^2)_\gamma$ is found to be proportional to $(\gamma H_0)^2$.

There are 2 Soviet references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Urals Polytechnic In-
stitute)

SUBMITTED: October 28, 1958

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24(3)

SOV/56-37-2-23/56

AUTHORS: Kokin, A. A., Skrotskiy, G. V.

TITLE: The Theory of Paramagnetic Resonance in Systems Containing Two Kinds of Magnetic Moments

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 2(8), pp 482-489 (USSR)

ABSTRACT: The authors develop a better and more complete (as compared to that of G. V. Skrotskiy, Ref 4) thermodynamical and micro-scopical theory of systems containing two kinds of magnetic moments. This theory is developed for weak alternating fields, including the deduction of equations for the partial magnetizations $\vec{M}_1$ and $\vec{M}_2$. The thermodynamical theory of the systems under consideration can be developed on the basis of the thermodynamics of irreversible processes. The paramagnetic sample is considered to be in a constant magnetic field $H=H_0$ and in an alternating magnetic field $\vec{h}(t)$, which is a slight disturbance to the thermodynamical equilibrium. In this case the partial magnetizations $M_j=M_j(t)$ $(j=1,2)$ of the subsystems satisfy the equations $\dot{M}_{1j} = \sum_{m,k} L_{1m,jk}(h_m(t) - h_m^k)$,

$l,m= x,y,z;$ $j,k = 1,2$, which are linear with respect to the variable field. In these equations,

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SOV/56-37-2-23/56

The Theory of Paramagnetic Resonance in Systems Containing Two Kinds of
Magnetic Moments

$\vec{h}^k = \chi_k^{-1}(\vec{M}_k(t)-\vec{M}_k^0)$, $\vec{M}_k^0 = \chi_k\vec{H}$ denoting the partial magnetiza-
tions of the magnetic subsystems. After several steps the
system of the linear equations of motion for the partial
magnetizations are found. The static susceptibilities entering
these equations depend upon the thermodynamic temperatures of
the subsystems which in the general case will be different from
the temperature of the remaining degrees of freedom of the
magnetic substance - the equilibrium temperature of the lattice.
The variation of the temperature of the subsystems is ignored,
and is arbitrarily assumed to be equal to the temperature of
the sample. The free precession of the magnetization $\vec{h}(t)\neq 0$
in the constant magnetic field H_0 is investigated. In the
sequel the solutions of the above linear equations of motion
for the partial magnetizations are determined and written down.
The microscopical theory of the relaxation and resonance pheno-
mena in systems with two kinds of magnetic moments can be
developed on the basis of the method due to R. Kubo and K.
Tomita (Ref 8) in a manner similar to that employed by the
authors for the case of one kind of spin (Ref 7). The g-factors
Card 2/3   of the particles are assumed to be isotropic. By a suitable

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choice of the Hamiltonian it is possible to account for the quadrupole moments of the nuclei, atoms and ions and their interaction with the local inhomogeneous and generally fluctuating electric field. Moreover, it is possible by these means to account for the weak direct and indirect exchange interactions (which lead to a hyperfine structure). The relaxation functions are determined for a homogeneous and isotropic medium. The relaxation time and the displacement of the resonance frequency of one subsystem are interrelated with the relaxation time and the resonance frequency of the other subsystem. This means that a general relationship exists analogous to that of Kramers-Kronig. The real and imaginary part of the susceptibility are interrelated through these relations. There are 9 references, 5 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: March 5, 1959

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24(3)   SOV/56-37-3-32/62
AUTHORS: Skrotskiy, G. V., Kokin, A.A.

TITLE: On the Influence of the Coherent Magnetic Dipole Radiation on
                 Magnetic Resonance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
                 Vol 37, Nr 3(9), pp 802-804 (USSR)

ABSTRACT: L. I. Mandel'shtam (Ref 3) was the first to find out that
                 coherence phenomena occur during the emission of electromag-
                 netic quanta caused by a spin system, if the wavelength is
                 greater than the dimensions of the system; these phenomena
                 lead to a considerable increase of the radiation width of the
                 line (cf. also Refs 1,2,4). V. M. Fayn (Ref 5) found that
                 taking spin interaction into account by means of a general
                 radiation field in the radio frequency range leads to a shift
                 of resonance frequency. In the present paper the authors
                 calculate the corrections to the relaxation time and calculate
                 the additional resonance frequency shift caused by the coherent
                 radiation field. As expected, the quantum theory, within the
                 approximation investigated, leads to the same results as the
Card 1/4   classical one. The classical equation of motion for a magnetic

On the Influence of the Coherent Magnetic Dipole Radiation on Magnetic
Resonance

moment μ of a homogeneously magnetized sample that is small
compared to the wave length of the radiation, is set up ac-
cording to Ginzburg (Ref 6) as follows: $\dot{\mu} = \gamma[\vec{\mu}\vec{H}] - \frac{4\gamma\omega_m}{3\pi v^3}[\mu\ddot{\mu}] +$

$+ \frac{2}{3v^3}[\mu\ddot{\mu}]$; $v = c/\sqrt{\varepsilon\mu}$ is the phase velocity of light in sample

matter, and $\omega_m \approx cV^{-1/3}$. Classical equations describing the

magnetization $M = \mu/V$ are derived. The quantum-theoretical
treatment of this phenomenon is carried out (for weak radio-
frequency fields) by means of the method developed by Kubo and
Tomita (Ref 7). The time-independent part of the Hamiltonian is
written down in the form $\hat{\mathcal{H}} = \hat{\mathcal{H}}_1 + \hat{\mathcal{H}}_2 + \hat{\mathcal{H}}' = \hat{\mathcal{H}}_0 + \hat{\mathcal{H}}'$, where

$\hat{\mathcal{H}}_1 = -\hbar\omega_0 \sum_{j}^{N} I_{j_0}$ and $\hat{\mathcal{H}}_2 = \sum_{k\lambda}(a_{k\lambda}^+ a_{k\lambda} + \frac{1}{2})\hbar vk$; $\hat{\mathcal{H}}_1$ describes the

interaction of the magnetic moments with the external constant
magnetic field, $\hat{\mathcal{H}}_2$ - the Hamiltonian of the radiation field,

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On the Influence of the Coherent Magnetic Dipole Radiation on Magnetic
Resonance

$\lambda = \pm 1$ corresponds to the two possible values of the polariza-
tion. The Hamiltonian of the interaction of the magnetic moments
with the radiation field is, if the dimensions of the system
are considerably smaller than the wave lengths, obtained as

$$\hat{\mathcal{H}}' = - i\gamma \hbar \sum_{k,\lambda} \sqrt{2\pi \hbar vk/V} \sum_{j\alpha}^{N} (-1)^{\alpha} \hat{I}_{j\alpha} \, \mathcal{E}_{k-\lambda-\alpha} \, (\hat{a}_{k\lambda} - \hat{a}^{+}_{k\lambda}).$$ Relaxa-

tion time and resonance frequency shift may be found in an
analogous manner as shown by one of the authors' previous pa-
pers (Ref 8). In conclusion, the case is briefly discussed in
which the sample is assumed not to be in free space but in a
resonator, and the hereby caused change of signal characteris-
tic is investigated. If $Q'(\omega_o)$ is the quality of an ideal

resonator with magnetic field, and $Q_o(\omega_o)$ that of a real

resonator without a magnetic field, and $Q(\omega_o)$ that of a real

resonator with magnetic field, $Q'(\omega_o) = \dfrac{Q_o(\omega_o)}{Q_o(\omega_o)/Q(\omega_o) - 1}$ holds;

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On the Influence of the Coherent Magnetic Dipole Radiation on Magnetic Resonance

Q_o/Q and Q_o could be measured directly, and thus the frequency dependence of the relaxation time could be determined. There are 8 references, 5 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: April 17, 1959

Card 4/4

KOKIN, A. A. Cand Pnys-Math Sci -- "The quantum theory of electronic ard nuclear

paramagnetic resonance and relaxation in weak variable fields." Sverdlovsk, 1960

(Min of Higher and Specialized Secondary Education RSFSR. Ural State Univ im #

A. M. Gor'kiy) (KL, 1-61, 179)

-17-

8/058/61/000/010/034/100
A001/A101

24,7900

AUTHORS: Skrotskiy, G.V., Kokin, A.A.

TITLE: On radiation effects in magnetic resonance

PERIODICAL: Referativnyy zhurnal. Fizika, no. 10, 1961, 159, abstract 10V326 (V
             sb. "Paramagnitn. rezonans", Kazan', Kazansk. un-t, 1960, 46-50)

TEXT: The authors calculate corrections to the times of longitudinal T_i
and transversal $T_\perp$ relaxation, due to radiation effects, for the case when a
paramagnetic specimen is placed into a resonator of arbitrary shape, possessing
a high Q-factor. The role of radiation phenomena is discussed for the case when
the specimen is in the resonator and resonance frequency $\omega_0 = \gamma H_0$ is consid-
erably greater than inverse relaxation times caused by intramolecular mechanisms.

                                             V. Avvakumov

[Abstracter's note: Complete translation]

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S/058/61/000/010/027/100
A001/A101

24.7900

AUTHORS: Kokin, A.A., Skrotskiy, G.V.

TITLE: On the role of self-diffusion process in the theory of magnetic re-
sonance

PERIODICAL: Referativnyy zhurnal.Fizika, no.10, 1961, 153, abstract 10V269 (V
sb. "Paramagnitn. rezonans", Kazan', Kazansk. un-t, 1960, 171-176)

TEXT: The authors discuss the role of translational Brown motion in the
magnetic resonance theory. This type of motion is essential at determination of
the shape of absorption line in the case of electronic or nuclear magnetic re-
sonance in liquids, solutions, gases and some solids. The correlation function
for scalar and dipole-dipole magnetic interactions is calculated for the case of
proton resonance in a paramagnetic solution.

V. Avvakumov

[Abstracter's note: Complete translation]

Card 1/1

S/139/60/000/004/025/033
E201/E591

AUTHOR: Kokin, A.A.

TITLE: Magnetic Resonance in Systems Exhibiting Simultaneously
             Electron and Nuclear Paramagnetism

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,
             1960, No.4, pp.198-205

TEXT: The author and Skrotskiy (Ref.1) developed earlier a
theory of paramagnetic resonance in systems containing two types of
magnetic moments, e.g. electron and nuclear moments. This theory
makes it possible to give a unified explanation of various
magnetic resonance effects. It is used here to deal with nuclear
resonance in paramagnetic solutions and in metals and with the
effect of the neighbouring nuclei on electron spin resonance. The paper
is entirely theoretical. Acknowledgment is made to G.V.Skrotskiy
for his advice.   There are 10 references: 4 Soviet and 6 English.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
             (Ural Polytechnical Institute)

SUBMITTED: May 7, 1959
Card 1/1

9.4300 $(3203,1043,1143)$

AUTHORS: Skrotskiy, G.V. and Kokin, A.A.

TITLE: On the Possible Role of Coherent Effects in Magnetic Resonance

TEXT: In magnetic-resonance experiments the specimen is placed in a coil included in a resonance circuit or in a resonator, and this has an important effect on radiative corrections. Consider a specimen placed in a resonator of volume V_p of arbitrary form, placed in an external magnetic field $H_o = H_z$. If the Q-factor of the resonator is very much greater than unity, the natural frequencies ω_n of the resonator and the proper functions $\mathbf{x}_{\lambda n}(r)$ are not very different from the natural frequencies and the proper functions of the resonator when there are no losses. The latter are determined by Eq. (1) and the boundary conditions for an ideal resonator. The parameter $\underline{n}(n_1, n_2, n_3)$ in Eq. (1) assumes discrete values

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and the two values of the subscript λ , i.e. ± 1 , correspond to the two possible states of polarisation. The proper functions $v_{\lambda n}$ are looked upon as orthogonal, i.e. they satisfy Eq. (2), where α represents the components of the vector $v_{\lambda n}$ in circular variables, i.e.

$$v_{\pm 1} = \pm \frac{1}{\sqrt{2}} (v_x \pm iv_y), \quad v_o = v_z .$$

The damping in the resonator can be taken into account by introducing complex frequencies, as indicated by Eq. (3). The radiation field in the resonator containing a small specimen volume V can be found from Eq. (4), whose solution is given by Eqs. (5) and (6). Beginning with a certain value of $n = n_m$, when the change in $v_{\lambda n}(r)$ takes place over distances which are small in comparison with the dimensions of the specimen, i.e.

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$$c/\omega_n < v^{1/3} = c/\omega_m$$

zones with $n > n_m$ can be neglected so that

$$\underline{v}_{\lambda n}(\underline{r}) \approx \underline{v}_{\lambda n}(0) \quad (n < n_m), \quad \underline{M}(r,t) = \underline{M}(0,t) .$$

Bearing in mind Eq. (7), the radiation field is given by Eqs. (8) and (9). In steady state (frequency ω) the magnetisation is given by Eq. (10), which for small deviations from the equilibrium state, $M_\alpha(t) \approx$

$\approx \chi_0 H_0 \delta_{\alpha 0}$,   may be replaced by Eq. (11). If the external magnetic field $\underline{h}(t)$ has a "left" polarisation in the plane perpendicular to the constant magnetic field H_0 (Eq.12),

then neglecting radiative reaction, the magnetisation is given by Eq. (13). Substituting this expression into Eq. (8), it is found that the magnetic field is given by Eq. (14).
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On the Possible Rôle of Coherent Effects in Magnetic Resonance

The latter equation represents the main result of the present
work. Using Eq. (11), the analysis can be extended to a
system of equations which can be used to determine $M_\alpha(t)$,
taking into account the reaction due to the radiation. This
system of equations assumes a very simple form in two special
cases, which are considered at the end of the present paper, where
expressions are derived for the relaxation time and the shift
in the resonance frequency due to radiative corrections.
Acknowledgments are expressed to V.L. Ginzburg for valuable
advice. There are 11 references: 4 Soviet, 1 French and
6 English.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
                 (Ural Polytechnical Institute)

SUBMITTED: August 28, 1959, originally;
                 March 10, 1960, after revision.

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